

# THE ZOOLOGIST

No. 809.—November, 1908.

## EXPERIENCES WITH EAGLES AND VULTURES IN THE CARPATHIANS.

BY R. B. LODGE.

(PLATE IV.)

A most enjoyable visit to the Carpathians in September, 1908, has enabled me to obtain some fine photographs of Golden Eagles, Griffons, and Ravens, and an account of my experiences with these birds may perhaps be of interest to readers of 'The Zoologist.'

On Sept. 1st we rode up one of the highest peaks with a long string of pack-horses carrying tents and provisions for a fortnight's stay, and after a day's Trout-fishing in the beautiful lake, on the shores of which our tents were pitched, we looked about for a convenient spot where we could put into execution our plans, long contemplated, of making an attempt to photograph the Eagles and Vultures of these regions. We had even a faint hope, unfortunately not fulfilled, of attracting within the range of the camera the great Lämmergeier (*Gypaëtus barbatus*), which not so many years ago was to be found there.

After some search we found, on the ridge very near the summit, a convenient crack or fissure in a big rock, which looked as if it could be converted into a good hiding-place with a little labour. Accordingly, a wall of rough stones was built up at one side and in the front, while a sloping roof of pine-boughs

resting against the large rock was carefully covered over with turf. In this ambush I spent nine days watching the carcase of a horse which we drove up and shot about eight or nine yards in front of the camera.

I had not taken up my position very long on the first day before the "swish, swish" of many powerful wings beating the air and the sound of their guttural croakings on all sides told me plainly enough that the Ravens were beginning to assemble for the feast, and I soon had proof that, hidden away in my rocky chamber, I was perfectly invisible even to their keen sight. One of them even settled on the turf roof just above me, loosening some of the soil which fell on to my head. Directly afterwards I had the pleasure of seeing first one and then another hop into the field of the camera, until there were eight or nine of the sable marauders congregated on the body, one sitting on the stiffly upstretched hind leg, another on the head, one on the belly, and the rest looking for some place of vantage from which to begin operations. But, after picking out the eyes, the tough skin resisted all their efforts, and for some days they could do but little, and after clustering round the body in black clouds would leave the spot as soon as I appeared in the morning. Sometimes they would not appear again all day at the carcase, but their croaks could generally be heard in the neighbourhood.

It was bitterly cold work waiting so many hours—generally nine each day when the light was fairly good—at such an elevated post, 7000 ft. above sea-level. Sometimes there was a heavy cold mist and snow, and always a piercing wind which penetrated freely through all the numerous cracks and fissures in the rocky chamber in which I was hidden, and for eight days I did little but sit and shiver in spite of the thick garments and rugs I took up with me. Putrefaction in consequence was not very rapid, and, as the birds appeared unable to make an entry, we found it necessary to assist the operations of nature with an axe.

The first Eagle to appear was an Imperial (*Aquila imperialis*). Looking through the camera I saw a large bird flying towards the bait, which presently settled, or appeared to do so, on a rock a little beyond where I could see it. I saw no more for some time



but probably, after the nature of Eagles, it was cautiously scanning the whole neighbourhood before venturing any further. Presently its head appeared above the edge of the rocks close to the bait, and then the bird very slowly and with great caution perched on the head of the horse, where I photographed it. The light, however, was very dull, and, as I expected, the photograph is not a very successful one. Whether it heard the click of the shutter or not I cannot say, but it disappeared as silently as it had come. For some days after this I saw no more visitors except the Ravens, and had plenty of time and opportunity to watch their antics, which are sometimes amusing. The humour of a Raven, however, is of a somewhat quaint and grim character. For instance, after they have picked out the eyes and devoured a great part of the inside of a dead animal, they appear to be seized with misgivings that perhaps it is only asleep after all, or only pretending to be dead ; so to make sure one of them will solemnly walk up and give it a dig with its great horny beak in the ribs or on the face, and then jump up three or four feet into the air, as if afraid of it suddenly coming to life again.

One day I had a visit from a Golden Eagle, which appeared silently and suddenly in much the same way as the Imperial had done ; it even settled on the highest portion of the bait, but just as I was in the act of releasing the shutter it departed suddenly before I could do so, leaving me much disappointed at my failure to seize such an opportunity. Then came a day of expectation and hope, which resulted in nothing. My friend and host had told me that while fishing in the lake below he had seen several Vultures, both *Gyps fulvus* and *Vultur monachus*, flying about as if anxious to go to the bait, but that they were pursued and driven off by an Eagle.

I had in the meantime arrived at the conclusion that something of the kind was going on from the noises I had heard all one afternoon. For hours I had heard the beatings of heavy wings, evidently, from the sound, much more powerful than any Raven's wings, and it had seemed to me that some aerial combat was raging round me. Buried alive in my rock-tomb, and unable to see anything except through the camera, I could only guess at the truth ; but I felt nearly sure that an Eagle of some sort was

endeavouring to drive away a Vulture or Vultures. The noise they made was terrific. It really sounded as if two express trains, or perhaps two airships, were rushing through the air in deadly combat. Mingled with the flapping of immense wings I could hear cries of rage and once or twice actual blows struck. All this seemed to be quite close, as if the duel was being fought round and round the rocky pile in which I was concealed. But I could see nothing ; momentarily I expected something to alight on or near the dead horse, but all I could actually see was their great shadows gliding past me at lightning speed. This went on for quite two hours, until by degrees the noise became more and more distant, as though the Eagle had succeeded in driving his antagonists away from the scene.

On returning to our camp my suspicions were verified as before stated. This is the second experience I myself have of the antagonism existing between the Eagles and the more ignoble Vultures so graphically described by the late Crown Prince Rudolph, the first being in Spain, where I had seen a Bonelli's Eagle strike down a Griffon Vulture which had presumed to approach it too closely.

The next day the Eagle again appeared quite close to the carcase, and was in the act of attacking it when it suddenly flew off, and again I heard the same conflict going on, but on neither occasion did the Eagle return after driving away the Griffons, or whatever they might have been. I had now spent eight days without much result, and I made up my mind that if I could only succeed in photographing that Eagle I would shoot it as the only chance of being able to do the Vultures ; for as matters stood it did not come itself at all freely, and would not allow anything else to come.

I only had one more day as we had arranged to return, but on this last day my luck changed. To begin with, the light was good ; the sun shone splendidly and brightly, and I began by making sure of the Ravens in various good positions. Then the Eagle appeared, at first near the horse, only half showing above the rocks ; but it soon advanced, and sat on the highest part in a splendid attitude clearly defined against the sky, and, after looking round defiantly, began to tear at the meat. Needless to say I lost no time, but exposed plate after plate as fast as I could

get them into the camera ; and I felt sure that the light was sufficient, and all the conditions most favourable. After thus exposing seven or eight plates I carefully moved on one side the camera after loading my rifle, which rested against the rock behind me, and, taking as good an aim as I could in my cramped and awkward position, I fired, and the Eagle disappeared into space behind the horse down the side of the mountain.

One reason for shooting this bird was, as I have said, because it was the only chance of photographing the Vultures which I knew were anxious to come, and the other was that I wished to be sure in my identification of it as a Golden Eagle (*Aquila chrysaëtus*). In my own mind I was sure it was so, from the whiteness of the basal half of the tail, as well as from the build and general characteristics of the bird, but I could not be sure that the photographs would show these distinguishing features plainly enough to make it certain.

Of course, I dare not show myself in any attempt to find the Eagle—that must be left until the Jäger should come up as usual to let me out of my prison in the evening. In the meantime the camera was replaced and re-focussed in the hope of further visitors. Sure enough, before twenty minutes had elapsed the wished for and expected Vultures put in their appearance. But their manner of doing so was very curious, and nearly led to their detecting my presence. Though I quite hoped and expected they would come, I did not think that they would return so quickly, and when I heard just outside a dreadful sighing and moaning, as if something was dying in the greatest agony, I never thought about Vultures, but made sure it was the Eagle I had shot. The sounds were so painful to hear that I moved away the camera and loaded the rifle again in order to put it out of its pain, but on looking out of the small hole left for the lens I perceived, not the dying Eagle, as I had expected, but an immense Griffon Vulture advancing to the carcase. I was afraid that it must have seen me, but at once drew back, and, putting down the rifle, replaced the camera in position, and, as it still remained, photographed it as quickly as I could.

It was the extraordinary noises made by these birds—for there were three of them—which had deceived me. For some time the one first seen succeeded in keeping the rest of the party

away; when they advanced to the feast it drove them back with the same hissing and snoring which I had heard, but in a short time they were all tearing away at the horse while I was photographing unseen and unsuspected the curious scene.

Side by side with the Griffons several Ravens were also feeding, not at all alarmed at the propinquity of their colossal neighbours.

On my return to the camp that evening I had time for an hour's fly-fishing before dark, and caught the best Trout taken during our stay—a beauty of four pounds—which made a gallant struggle before being led into the landing-net.

The 9th of September, 1908, will long be accounted a lucky day to be marked in the calendar of my memory with a white stone.

## LATE BREEDING OF AND RETENTION OF SUMMER DRESS BY THE GREAT CRESTED GREBE.

By O. V. APLIN, F.L.S.

WHEN fishing in a reservoir in Northamptonshire on Oct. 10th I saw an old Crested Grebe—presumably a female—still in practically full summer plumage (but possibly slightly duller than in spring), followed by two young ones barely half-grown, which uttered from time to time their usual shrill piping cry, and exhibited the stripe-markings and the disproportionately long beaks and faces so remarkable in the young of this species. There were three or four other Crested Grebes on the water which, as might be expected at that date, had assumed the winter dress, or almost so.

The curious point about this observation is not so much the lateness of the young (for, as will be remarked upon presently, this Grebe is inclined to breed late in the season), but the fact that the parent bird was still in summer dress at a time of the year when it should have been in winter plumage, or almost so. And it seems probable that the fact of the bird breeding late and attending late young, had actually retarded the usual change of plumage. And further, this looks as if it were of some advantage to a bird when rearing young to wear the breeding-dress. I could see no other Grebes in breeding-dress on the water; only one bird was in attendance on the young. So, presumably, the other parent (unless something had happened to it, which is unlikely, as there is no shooting on the reservoir and the boats were ashore for repairs) was one of those which had changed into winter dress. The condition of these latter birds precludes the idea that the unprecedented summer-like weather which prevailed at that season had anything to do with the retarded change.

The Grebes on this water are nearly always later in breeding than they are in some other parts of the country. There is little or no cover until the rushes and the beds of *Ranunculus*, *Polygonum*, &c., are up. The rushes are very late in coming up, and

the birds like to breed inside the tall rush-beds as a protection from the Carrion-Crows, which are very numerous round the reservoir, and take a great many eggs of the Coots, as well as those of the Grebes whenever they get the chance. Eggs have been known on this pool in May, but probably these early eggs are destroyed either by Crows or occasionally by a sudden rise in the water, the level of which sometimes rises very rapidly after heavy rains in spring. But breeding is more usual in the latter part of June and early in July. I have known fresh eggs (two nests) on July 6th in one year, and on the 2nd in another, and "sat upon" eggs (two nests) on the 15th in a third.

The late nesting of the Great Crested Grebe is alluded to in the 'Field' newspaper for Oct. 29th, 1898; some eggs were taken in Ireland towards the end of July, and the bird laid four more, which on Sept. 1st were "fairly advanced towards incubation." Nilsson, indeed (quoted by Lloyd in his 'Scandinavian Adventures'), speaks as if late summer was the normal breeding-time in Sweden. Describing its breeding haunts he writes: "And here one finds, in July or the beginning of August, four eggs." On the other hand, I have heard of full clutches of eggs found in Nottinghamshire on May 6th, and an egg laid in Oxfordshire as early as April 24th.

## NOTES ON CORNISH MAMMALS.

BY JAMES CLARK, M.A., D.Sc., A.R.C.S.

THE first local naturalist to pay much attention to the Mammals of Cornwall was Jonathan Couch. In the first volume of his 'Cornish Fauna,' published in 1838, he gives an annotated list of county species, and from that time up till his death contributed occasional notes on the subject, chiefly to 'The Zoologist.' In 1849, Dr. W. P. Cocks, of Falmouth, included a list of mammals in his 'Fauna of Falmouth,' and in 1861 Dr. W. K. Bullmore, in his 'Vertebrate Fauna of Falmouth,' greatly increased our knowledge of their local distribution. From that time onwards the subject was unaccountably neglected for nearly forty years. The only indication of interest during that long period was the revision of Couch's 'Mammals' by J. Brooking Rowe in 1878 for publication by the Royal Institution of Cornwall, and the appearance of one or two notes in 'The Zoologist' by T. Cornish, of Penzance, chiefly on the occurrence of the Black Rat in the county.

The following notes are based on the observations of the writer and his pupils during the last nine years. Those made prior to November, 1905, have been incorporated in the article on Mammals in the 'Victoria History of Cornwall,' but a considerable amount of systematic observation has been carried out since that time.

The Greater Horseshoe Bat (*Rhinolophus ferrum equinum*, Schreb.) was first mentioned by Cocks as having been found in a cave between Swanpool and Pennance Head, Falmouth, and the record is quoted by Bullmore. There is apparently no reference to any other county occurrence till 1899, when the writer discovered a dilapidated specimen in the Museum of the Royal Institution of Cornwall, Truro, marked "Looe, 11th September, 1862." Though the history of this specimen could not be traced, the handwriting on the label was identified by Canon Moor, of

St. Clement's, as that of Stephen Clogg, the well-known bird lover of Looe. Unfortunately it was literally dropping to pieces, and had to be destroyed. In May, 1901, one of the students in the Agricultural class at Liskeard killed an adult female in that neighbourhood; its head and body measured 2·25 in. in length, the tail 1·35 in., and the wings from tip to tip about 11 in. In December, 1906, J. Chiene Shepherd, of Newquay, found a male in one of the caves of Porth Island, which he nearly burned with his candle under the impression that it was a fungus. He kept it alive for several weeks, but it died during sleep, and was brought to the writer in an advanced stage of decomposition. Its head and body measured a little over 2 in. in length, and its tail 1·3 in. On June 4th, 1907, a larger specimen with a tail 1·5 in. long was killed and mangled by some boys at Wheal Golden, a deserted mine on the top of the sea cliff near Penhale Point, to the west of Newquay.

The Lesser Horseshoe Bat (*Rhinolophus hipposiderus*, Bechst.) is much commoner and apparently much more widely distributed. During the last nine years it has been fairly plentiful in several of the deserted mine-shafts about Baldhu and St. Agnes, and in one of the less frequented caves at Porth, near Newquay. Occasional specimens have been discovered in the Cathedral Cavern there, and also in the Tea Caverns near the Headland, and in two of the caves in East Pentire. The Camborne mining students reported it from the North Cliffs, and in January of this year brought in a living voucher specimen. One of the clerks in the employment of the Eastern Telegraph Company captured one at Guethenbras, near Tol-pedn-penwith, in November, 1906, and the late W. E. Baily reported it from Mousehole, near Penzance, in 1902. In 1905 it was plentiful round the old Manor House at Godolphin. It is not uncommon to the west of Swanpool, Falmouth, and has been found several times in the neighbourhood of Truro. In October, 1903, a male was captured at Turbot Point, to the south of Mevagissey, and that same autumn the species was recorded by R. V. Tellam from Bodmin. It has been reported several times from Launceston, and an example in the Museum there is marked "local." In 1901 C. Upton Tripp obtained a specimen for the writer from Altarnun.

The Long-eared Bat (*Plecotus auritus*, L.) is common and generally distributed throughout the county, except among the higher-lying villages towards the north coast and around the Bodmin Moors. It is apparently absent, for example, from Cardynham, Camelford, and St. Cleer. In the summer and early autumn of 1905 it was the commonest Bat at Millook, and was evidently plentiful at Crackington Haven and at Boscastle. A young female was captured by E. T. Price at Hugh Town, St. Mary's, in April, 1904, the only record up to the present for the Isles of Scilly. The Barbastelle (*Barbastella barbastellus*, Schreb.) was obtained by Cocks from a cave to the west of Maenporth, near Falmouth, over sixty years ago, and in Baily's collection there was a specimen captured by a fisherman between Black Head and the Lizard in September, 1895. An example was reported to have been obtained at Newquay about 1886, and to have been sent subsequently to the Museum at Launceston. The writer, however, has not been able to obtain any trace of it there, and the occurrence of this species on the north coast seems unlikely. Dobson, in his 'British Museum Catalogue,' records an example of the Serotine (*Vespertilio serotinus*, Schreb.) from Tintagel. In August, 1902, W. Thomas sent in a female obtained between Mawgan and St. Columb. The specimen was exceptionally rich in its colouring—a deep warm chestnut above and a smoky yellow below. In May, 1906, R. V. Tellam obtained an undersized, probably immature, male near Lostwithiel. The Pipistrelle (*Pipistrellus pipistrellus*, Schreb.) is very common and generally distributed. It has been seen on the wing at Truro in every month of the year, and on Jan. 9th, 1904, several were flying about at noon in the gardens at Tresco Abbey, in the Isles of Scilly. Two specimens of Natterer's Bat (*Myotis nattereri*, Kuhl) were obtained by Couch from Looe in 1852. It does not seem to have been noted in the county again till the autumn of 1900, when a Bat "quite white below" was reported from the Lizard, and in September, 1902, a female was sent in from that district. Daubenton's Bat (*M. daubentonii*, Leisl.) was recorded by Couch from Looe, and by Cocks and Bullmore from Falmouth. In 1900 M. H. Williams, of Pencalenick, Truro, sent in a specimen for identification that had been killed quite close to the house,

and Bats, probably of this species, have been occasionally watched flying persistently backwards and forwards over the ponds there. In August of the present year a female was killed by a farm labourer near Polperro, and sent in the flesh to the writer. An example of the Whiskered Bat (*M. mystacinus*, Leisl.) was obtained by R. O. Waters, of Truro, near Fowey on Aug. 24th, 1901. In captivity it was restlessly active, and curiously agile and dexterous in its movements when not aware that it was under observation. It was extremely timid, and for several days refused all food. Gradually, however, it took to eating finely chopped raw meat in the dark, but refused freshly killed insects. It was highly sensitive to sudden illumination, and when the corner of the cloth that usually covered the cage was lifted, even in a room with a north light, it would dash excitedly from side to side for a minute or more, and would take no further food for a day or two. In a north room it was not at all affected by the dawn. At the end of a month it was as wild and unapproachable as when first captured, and was consequently taken back to Fowey one evening and liberated.

Among the Insectivora, the Hedgehog (*Erinaceus europaeus*, L.), the Mole (*Talpa europaea*, L.), the Common Shrew (*Sorex araneus*, L.), and the Water Shrew (*Neomys fodiens*, Pall.) are plentiful and generally distributed. The Pigmy Shrew (*Sorex minutus*, Pall.), though widely distributed, is probably scarce, and has been overlooked by previous naturalists. The first specimen seen by the writer was captured alive at Launceston Castle in June, 1900. Photographs of this and of the other Shrews were shown to the members of the Agricultural class at Liskeard, and as the result an example of the Pigmy Shrew was brought in the following year from near St. Keyne. In 1903 F. J. Polkinghorne trapped two at Bodmin, and one was identified in the early autumn near Truro. Several have been obtained since in the Truro-Falmouth district, and in the spring of 1907 one was brought in from Lostwithiel. It has been reported from Helston and Trevaylor, near Penzance, but the writer has seen no specimens from further west than Maenporth.

The Fox (*Vulpes vulpes*, L.) is generally distributed in suitable localities throughout the county, but has its strongholds in the rough broken cliff-land of the coast, where it is locally plentiful.

In a big patch of dense oak-scrub between Millook and Dizzard Head, Foxes and Badgers live side by side, the latter in astonishing numbers. The association is on the whole an amicable one, but occasionally there is violent nocturnal commotion in the colony. The Pine Marten (*Mustela martes*, L.) was undoubtedly common in the eighteenth century, but rapidly diminished in number towards its close, chiefly, in Couch's opinion, because the numerous pollard trees that were permitted in olden times to grow about the homesteads for the sake of fuel were cut down as coal came into use among the farmers, and so the safe and congenial shelter afforded by the hollow trunks for these and other members of the Weasel family was destroyed. In 'The Zoologist' for 1878 (p. 127) E. H. Rodd mentions the occurrence of a Pine Marten in the Glynn Valley, near Bodmin, about the year 1848, and records the capture of a full-grown specimen in the neighbourhood of Delabole quarries in March, 1878. Somewhere about 1885 it seems another example was killed in the East Looe Valley, a few miles from Liskeard. The animal was stuffed by John Ough of that town, and was seen at the time by several local naturalists who are still living. Unfortunately John Ough's private memorandum book has been mislaid, and may have been destroyed, and up to the present there is no information as to the Marten's captor, or as to the destination of the stuffed specimen. This last reported occurrence of the Pine Marten in Cornwall was brought to the writer's notice by J. C. Tregarthen. There is an example in the Museum of the Royal Institution of Cornwall, Truro, but its history is not known.

The Polecat (*Putorius putorius*, L.) is now very scarce, but can hardly be called rare, as it still breeds sparingly in the rough, wild cliff-land of the north coast, and occasionally at least on the south. Though the majority of reputed Polecats killed in the county are domestic cats run wild, the writer has during the past nine years seen six genuine Cornish examples of the species—three from between Tintagel and Widemouth Bay, one from near Launceston, one from Chacewater, and one from the Land's End district. In addition to these, Tellam has reported one from Bodmin, H. Harris of Knighton's Kieve two from between Bossiney and Boscastle, and Sandercock one from

Penryn, all of which may be accepted without hesitation. The Stoat (*P. ermineus*, L.) is common and generally distributed. White and pied examples are occasionally met with, but individuals in true winter pelage are rare. One beautiful specimen, white all over except for a triangular speckled patch of brown and white between the ears and nose and the customary black tip to the tail, was caught at Killiow, near Truro, during the blizzard of 1891. Another with the brown colour somewhat more pronounced on the head was taken between Mawgan and St. Columb in February, 1907. Canon Thynne examined a similar specimen that had been trapped near Kilkhampton in the early spring of 1895. Pied and white Stoats are well represented in the Museum of the Royal Institution of Cornwall, Truro. The Weasel (*P. nivalis*, L.) is widely distributed, and on the whole fairly common. Pied and white examples are more rarely met with than in the case of the Stoat, but the Truro Museum collection contains several, none, however, of recent date. The Badger (*Meles meles*, L.) is remarkably common locally in the woodlands, on the broken cliff-land, and among old mine-shafts and deserted workings, and it is so generally distributed that there are few, if any, parishes in the county in which it is not resident. It is abundant in the Land's End district, where, as J. C. Tregarthen says in a letter to the writer, there is hardly a croft it does not traverse in its beats, or in which it has not an earth. It is very common around Camborne, Redruth, and St. Agnes, in the Fourburrow county, and in suitable localities throughout the Truro-Falmouth district. It is obviously plentiful, too, around Bodmin, St. Austell, Liskeard, Looe, and Launceston, but the maximum density of population is reached in sundry large patches of scrub on the irregular cliff-face of the north coast between Tintagel and Widemouth Bay.

The Otter (*Lutra lutra*, L.) is plentiful and generously distributed throughout the streams of the county. It is of frequent occurrence in the open sea and in caves along the south coast, and occasionally ventures into the estuaries of the Looe River, the Fowey, and the Fal. On the north coast it is rarely seen in the open or even in the estuaries, though its traffic is usually conspicuous along the banks, not only of the larger streams but also of many of the insignificant brooks that empty into the

Bristol Channel. Its favourite haunt during the greater part of the year is the rocky bed of the streams that tumble down the steep sides of the Bodmin Moor plateau, though it is always well represented in the middle and lower reaches of the rivers as well, and there is probably not an unprotected watercourse or pond in the county that is not visited by this predacious animal. The Common Seal (*Phoca vitulina*, L.) occurs locally along the north coast from Marsland Mouth to Pendean. A few frequent the rocks at Cape Cornwall, and groups are occasionally noticed on the Brisons. It is often reported from the Land's End round to the Logan Rock, and for the last three years Seals have been frequently observed a little to the west of Lamorna. Further east it is rarely seen on the south coast, and most of those reported from the English Channel are Otters. One, however, was seen at Black Head and two at Coverack in the autumn of last year; the late Matthias Dunn saw them occasionally on the rocks near Gorran, where they reappeared for several weeks in the autumn of 1906; stragglers are at long intervals recorded from the neighbourhood of Polperro, and in 1861 one was killed in Whitsand Bay east. It evidently breeds in small numbers on the lonely shores of the Bristol Channel. Baby Seals have also been taken or seen on the beaches at Porth Chapel and Porthcurnow, and have been reported from Porthgwarra, and from the northern extremity of Whitsand Bay west. This species is completely replaced at Scilly by the Grey Seal, as Dorrien-Smith knows of only one specimen being with certainty identified there during the last forty years. The Grey Seal (*Halichærus gryphus*, Fab.) has its headquarters on the Isles of Scilly, where it is remarkably common, especially among the western islands, Roseveare, Rosevean, and Gorregan. On the writer's first visit to these rocky islets one fine day in May he was able, with the aid of a glass, to count seventeen at one time on Rosevean and Gorregan alone. The heaviest killed by Dorrien-Smith weighed 672 lb. Adult specimens have been seen on the mainland coast at Boscastle, at Padstow, at Porth Island, Newquay, the last in September, 1907, at Zennor and near Pendean. It has also been reported from the Brisons, from Tol-pedn-penwith, and from near St. Loy. White pups of the Grey Seal have been taken several times on the mainland, but Millais thinks it improbable they breed there.

The Squirrel (*Sciurus leucurus*, Kerr) appears to be extending its range in Cornwall. It is at present abundant throughout the Truro-Falmouth district, but seems to be absent from the west and south-west, while in many parts of the east and north of the county it is scarce or altogether wanting. The Dormouse (*Muscardinus avellanarius*, L.) is widespread but local. Though apparently scarce in the Hayle, Camelford, and Callington districts, it is common in places about Helston, Falmouth, Truro, Lostwithiel, and Liskeard. Up till three years ago it was fairly common about Newquay, but lately has become scarce. The Brown Rat (*Mus decumanus*, Pall.) is generally distributed and much too common. Pied varieties are not uncommon, and an albino was killed by Mr. Henry Harris near Stratton in 1901. The Black Rat (*M. rattus*, L.) was several times recorded from the county by T. Cornish between 1878 and 1889, and especially from the Penzance district. In August, 1891, one was killed near Falmouth by a farm lad, and seen by the writer in the flesh. There seems to be no further county record till 1902, when one was caught in a trap and another seen at Heamoor, about two miles north-west of Penzance. In June, 1907, a very old male was captured at Paul, three miles to the south-west of the same town. A fine female of *Mus alexandrinus* was killed in the Falmouth Docks on June 30th, 1900. The House Mouse (*M. musculus*, L.) is abundant, and so, too, is the Long-tailed Mouse (*M. sylvaticus*, L.). The diminutive size and unobtrusive habits of the Harvest Mouse (*M. minutus*, L.) have caused it to be generally overlooked, and consequently its county distribution has not been worked out. It is locally fairly common about Penzance, and two examples have been captured at Hayle and one at Helston. Several young specimens were brought in from Pendarves by mining students at Camborne. About Falmouth and Truro it is local, but in places very common. About a dozen were obtained one day in a stackyard at St. Beward, and it is known to occur at Bodmin, Egloshayle, and Lostwithiel, so that it is evidently well represented in the middle of the county. Specimens have been obtained at St. Neot and at Launceston, but on the north coast it is either scarce or very local, as the only examples seen were from Mawgan and East Pentire, Newquay.

The Water Vole (*Microtus amphibius*, L.) is common in suitable habitats throughout the county. The Field Vole, too (*M. agrestis*, L.), is abundant, especially in low-lying, damp grass-land. The Bank Vole (*Eotomys glareolus*, Schreb.) was apparently overlooked by the older naturalists. Though probably nowhere common, it is widely distributed. The first local specimen seen by the writer was killed in Restormel Valley in May, 1901. The following month two were captured as the result of a systematic search in an ivy-covered hedgebank at Budock, Falmouth. Single specimens have been obtained at Constantine after much hunting, at Pencalenick, at Trerice, near Newquay, and in the neighbourhood of Luxulyan. On Whit-Monday, 1906, one was picked up running across the road at the entrance to Carnanton Woods at Mawgan. In spite of frequent and repeated search none have been found around Padstow or in the neighbourhood of Poundstock and Millook. In a miscellaneous collection formed by R. O. Waters, of Truro, was the skin of a Bank Vole that had been killed in the spring of 1900, about fifty yards beyond the Truro Viaduct in the direction of Idless. The Hare (*Lepus europaeus*, Pall.), though formerly common over the greater part of Cornwall, is now local and somewhat scarce. The Rabbit (*L. cuniculus*, L.) is abundant almost everywhere.

The geographical position of Cornwall and the long extent of seaboard raise great expectations as to the occurrence of Cetacea, but in the past their identification has been too often a matter of assumption rather than of systematic diagnosis. During the past nine years, though Whales have several times been reported, none have been identified.

The Grampus (*Orca gladiator*, Lacépède) appeared in Mount's Bay in 1902, and again in 1905. In 1902 it was identified off Mevagissey and at Fowey. In the autumn of 1904 a young specimen about fourteen feet long was caught in a drift-net near the Wolf Rock. Risso's Grampus (*Grampus griseus*, Cuv.) has not been recorded since 1870, or the Pilot or Ca'ing Whale (*Globicephalus melas*, Traill) since 1874. The Porpoise or Sniffer of the Cornish fisherman (*Phocæna communis*, Less.) is common along the south coast, and is frequently observed on the

north. It occasionally passes up tidal rivers to a considerable distance. One six feet long and 122 lb. in weight was found dead in the mud at Newham Cove, just below Lostwithiel Moors, in February, 1903, and a still larger one was reported from near the head of Restronguet Creek in the autumn of 1906. The Dolphin (*Delphinus delphis*, L.) is not uncommon along the south coast, and has been recorded from St. Ives, Newquay, and Port Isaac on the north. A large shoal visited Mount's Bay in July, 1901, and another in May, 1905. A shoal of about twenty were seen for some days in Falmouth Bay during the month of August, 1907, and it is of frequent occurrence inside the harbour. Shoals have also been reported from Mevagissey, Looe, and Portwrinkle.

## A FEW NOTES ON MYRMECOPHILOUS SPIDERS.

BY HORACE ST. JOHN K. DONISTHORPE, F.Z.S.

My friend Mr. O. Pickard-Cambridge, in some notes on new and rare British Arachnida in 1907, writes of *Thyreosthenius bivatus*, Cambr., as follows:—"Adult females were found by myself several years ago among débris and grass-stems in woods at Bloxworth, but have been overlooked until recently. Its most usual habitat appears to be in nests of *Formica rufa*; but besides the above I have specimens from other localities quite away from these nests. It does not seem to have been observed yet what the terms are on which it inhabits the ants' nests, or whether these are used as breeding-places for the spiders or not, or whether they serve as shelter principally during the winter. The ant is large and protected by its coriaceous epidermis, while the spider is very minute and delicate, so that it seems difficult to imagine the latter making a prey of its hosts in any way, either in the egg or larva state; but of course there may be very minute insects in the ants' nests which in the larva or perfect state would furnish food for the spiders. The subject of insects and, besides the spiders mentioned, various other species of Arachnids dwelling in ants' nests is a very interesting one. It has been closely worked out by Mr. H. Donisthorpe, to whom I am indebted for many species of spiders he has found in nests of several species of ants. The greater majority of the spiders, however, found in ants' nests are certainly, I think, simply there for purposes of warmth and shelter during the winter, and are mostly immature."

These remarks led me to collect together and write the following notes on such spiders as we know to occur, or to have occurred, with ants in Britain. I also take the opportunity to express some views I have formed on the origin of myrmecophilous species.

Now, between the true guests of ants, the indifferently tolerated lodgers, the hostile persecuted lodgers, the true parasites,

down to the most casual intruder, there are many steps and divisions which connect them with, or separate them from, each other. Some of these steps teach us, I believe, how the more perfect types in each group have been evolved in nature. For example, a beetle which is often found with ants, but more generally elsewhere, may show us how the first steps were taken to become more fully or exclusively myrmecophilous. It may be regarded to represent an ancestral form, not of any particular species, but of the commencement of the habit of being a myrmecophilous insect, as it is quite certain that the inhabitants of ants' nests must have been evolved long after the ants themselves. If, therefore, a species is often found with ants, and often with the same species of ant, although more generally found away from them, it is quite clear that it is not there by chance. I think it is wrong to say it has nothing to do with them, but rather to regard it as a case in point of the question I have just raised. We should try and find out what it is doing in such situations, a situation, moreover, of considerable danger to a perfectly non-myrmecophilous species. The above remarks apply to spiders as well as to all other creatures found with ants. I would divide the myrmecophilous spiders into three groups:—

I. Those species which are always found with ants. They belong to the indifferently tolerated lodgers.

II. Those species which hunt and prey on ants. They are generally found outside and in the neighbourhood of the nests.

III. Those species which closely resemble ants in appearance. They hunt their prey in the neighbourhood of ants' nests, and are protected from outside enemies by their resemblance to ants.

It is very difficult to classify exactly species into these different groups without further evidence on their habits. Finally, there are a number of spiders which I have found singly in ants' nests, whose occurrence there may be accidental. They may in some cases have been carried into the nests by the ants and not devoured, or have sought the nests for the reasons given by Mr. Cambridge. But even in this latter case they may be the first steps towards a myrmecophilous habit. I may here quote with advantage a passage from one of Prof. Wheeler's publications:—"In the lives of the social insects the threptic or philo-

progenitive instincts are of such transcendent importance that all the other instincts of the species, including, of course, those of alimentation and nest-building, become merely tributary or ancillary. In ants, especially, the instincts relating to the nurture of the young bear the aspect of a dominating obsession. The very strength and scope of such instincts, however, render the insects more susceptible to the inroads of hosts of guests, commensals and parasites."

I now propose to try and classify our ants' nests' spiders into these three groups.

#### GROUP I.

*Thyreosthenius bioratus*, Cambr.—This little spider is found in the hillocks of *Formica rufa*, and anyone who cares to spread a few handfuls of the nest materials on to a sheet or paper will be sure to find it. In April, 1900, I took an adult female in a nest of *F. rufa* in Guestling Wood, near Hastings. This was its first British record! Messrs. Butterfield and Bennett tell us that it is not uncommon in nests of this ant in the Hastings district, but that the adult males are rarely found. I have found it with its hosts at Weybridge, Oxshott, Woking, Pyrford, Enfield, Blean Woods, Knowle, and Nethy Bridge. I have taken both sexes, and I may say I have found it in *rufa* nests in every month in the year. Jackson has found it in nests in the Tyne Valley, and Bagnall at Corbridge, Winlaton, and Chopwell. I believe it is to be found wherever *F. rufa* occurs. Father Wasmann records that *F. rufa* and *F. pratensis* are its normal hosts. Mr. Bagnall took a male and female in the Derwent Valley away from ants, but it is only natural to suppose that it sometimes leaves the nests and strays about in search of fresh ones.

On its habits I have the following notes:—On April 26th, 1901, I brought up from Oxshott six specimens of this spider from a nest of *F. rufa*, and introduced them into my "observation nest" of the same ant. They at once entered the galleries, the ants paying no attention to them. I did not see any of them again till June 23rd, when a female came up, accompanied by a number of young ones, so they must have bred in my nest. After this specimens were observed on June 25th, 27th, 30th; July 18th, 21st, and 27th. On Sept. 19th quite a number were walking about in my nest. The last specimen observed was on

Nov. 26th. When they meet an ant they spring with great quickness to one side. On March 14th, 1902, when I was turning out my *F. rufa* observation nest, I found in a cleft in a bit of wood the nest and eggs of this spider.

This year I put specimens into small plaster nests, with ants, beetles, and small Diptera, &c., all taken or bred out of my *rufa* observation nest. The ants never molested the spiders. On one or two occasions I saw the *Thyreosthenius* feeding on one of the little flies (*Phylomyza formicæ* and *Sciara* sp.?), though I never actually saw the flies caught. I should say they certainly prey on small flies and other very small insects, &c., in the nests.

*Evansia merens*, Cambr.—This species was described from a male taken by Mr. Evans at Glenfarg, Perthshire, in 1899. Its connection with ants was not then mentioned, but Mr. Evans tells me he took it with ants. In 1901 Mr. Randell Jackson took both sexes (the female, of course, being new to science) with *Lasius niger* in Glamorgan. In June, 1903, I took a specimen in a nest of *Formica fusca* at Hayton Moss, in Cumberland, and in June, 1905, five specimens in a nest of the same ant at Barmouth. Mr. Jackson also found it with the same ant in the Tyne Valley. He writes:—"The spiders are found either in the galleries or on the under side of the sheltering stone. They are amongst the ants, and not merely hiding under the edges of the stone as so many other spiders do. They are not enclosed in cocoons, but the ants do not molest them. Adults may occasionally be found throughout the year, but most of the males are mature in September and October. The species ascends about 1000 ft. in Glamorganshire." Mr. Bagnall has taken it with *F. fusca* at Winlaton, and I found it with the same ant in September this year at Nethy Bridge, Inverness-shire.

*Tetralus arietinus*, Thor.—This spider was described from ants' nests in Sweden. In 1900 I took an adult and an immature male in nests of *Formica rufa* and *Lasius fuliginosus* at Oxshott, its first record for Britain. In September, 1901, Randell Jackson took a female with brood under a stone, but not with ants, on Craig-yr-Eglwys. He mentions there were numerous colonies of *L. niger* about, but did not notice any connection with the ants. Father Wasmann gives *F. rufa* and *L. fuliginosus* as its hosts.

*Cryphæca diversa*, Cambr.—I took a male of this species in 1900, and a female in June, 1901, both in a nest of *Lasius fuliginosus*, at Oxshott. The only other specimen then known was a female, the type, taken on an old railway near Carlisle. In 1906 I took five females on one occasion, and several more at other times with the same ants at Wellington College.

#### GROUP II.

*Micarisoma festiva*, C. K.—I have taken this species with *Formica rufa* and *Lasius fuliginosus* at Oxshott, with *F. sanguinea* and *L. niger* at Woking, and this May with *F. fusca* in the New Forest. Father Wasmann records it with *L. niger*, *brunneus*, and *fuliginosus*.

*Hahnia helvola*, E. S.—This spider has occurred to me on various occasions with *Lasius fuliginosus* at Wellington College. Wasmann records it from ants' nests.

*Harpactes hombergi*, Sep.—I have frequently taken this spider in all its stages, and both sexes, with *Lasius fuliginosus* at Oxshott; also at Wellington and Pyrford. This May I took it with *F. fusca* in the New Forest. Wasmann gives *L. fuliginosus*.

*Theridium riparium*, Blkw.—I have several times captured this spider with *Formica sanguinea* at Woking. Blackwell remarked that the food of this spider consisted chiefly of ants. Van Hasselt found their nests often full of remains of *Lasius niger*. Henking states that they most commonly hunt *Myrmica lævinodis*. (Wasmann gives a very circumstantial account of the capture of ants, *F. rufa*, *rufibarbis*, and *sanguinea*, by the very small *Theridium triste*, Hahn.)

*Microneta innotabilis*, Cambr.—I have taken specimens with *Lasius fuliginosus* at Oxshott and Wellington College, and with *F. rufa* in the former locality.

*Microneta viaria*, Bl.—I have taken this spider many times with *Lasius fuliginosus*, and also with *F. rufa*, at Oxshott. With the former species at Wellington College.

*Leptyphantes patens*, Cambr.—This species has been recently described from males and females taken by me with *Lasius fuliginosus* at Wellington College in the spring of 1906. As these are the first specimens known, and were taken in ants' nests, we can consider them myrmecophilous till the contrary is proved,

but it is impossible at present to know with certainty whether to place them in either Group I. or Group II.

### GROUP III.

*Micaria scintillus*, Cambr.—“The grassy slopes where this spider occurs (at Portland) are also numerously frequented by a large blackish ant, to which the spider bears so close a resemblance that, even after much practice, it requires a close examination to distinguish (before capture) between the ant and the spider; both have also a similar habit of running hurriedly now and then up a grass-stem, as if to get a larger range of view—or it may be that both are in search of the same prey; both, again, on the first inkling of danger, betake themselves to the shelter of the tangled grass, and to the stems and roots of other low herbage” (Cambridge). It will be observed that this spider exhibits both active mimicry (similarity of movements) and passive mimicry (similarity of form). I have seen it running about with *F. rufibarbis* var. *fusco-rufibarbis* at Whitsand Bay.

*Micaria pulicaria*, Saund.—I took a specimen of this little spider in the runs of *Lasius niger* at Mickleham. It also very closely resembled the ants in colour and appearance. I have since taken it with the same ant at Woking, as well as with *F. sanguinea*.

*Salicus formicarius*, Deg.—In August last I took a male and two females of this very ant-like spider at Sandown, Isle of Wight. They were all running about in company with specimens of *Myrmica scabrinodis* at the roots of some *Lotus major* at the foot of the cliffs. In life they bore the closest resemblance to the ants. Father Wasmann generally found this species in the neighbourhood of *Formica rufa*, *F. rufibarbis*, and *Myrmica lœvinodis* in Holland.

*Diblemma donisthorpei*, Cambr.—This new genus and species has been described by Mr. Cambridge from specimens taken by me in Kew Gardens, where I found it in some numbers last February and March. I discovered it in company with the little introduced ant, *Wasmannia auro-punctata*, to which, on account of its colour, size, and shape, it bears a strong superficial resemblance. The ant is abundant in the propagating pits, and nests in and under flower-pots, &c. The flower-pots rest on beds

of shingle and cinders, and the spider is to be found among the ants under the flower-pots. I believe the spider preys on small *Thysanura*, &c., and I have seen it carrying what looked like small scale insects.

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## NOTES AND QUERIES.

## MAMMALIA.

**The Badger in Norfolk.**—An interesting discussion has been running in the columns of a county newspaper with regard to the local status of the Badger in Norfolk, and several recent dates of "occurrences" have been cited in the course of correspondence which certainly suggest that its numbers at the present time have been considerably underrated. Cromer, Bylaugh (near East Dereham), Fornett, and Fakenham (near where, one writer declares, "four or five have been taken this year") were given as localities, and Mr. A. H. Upcher, referring to an instance at Sheringham, writes: "I know of one or two [that] have been trapped there of late, and others trapped in the neighbourhood." Lubbock ('Fauna of Norfolk,' 1848) mentioned the Badger as "all but extinct with us," citing one example as being taken "about three years back near Holt," further stating that "at Honing, in the neighbourhood of North Walsham, the Badger was frequent at the beginning of this [nineteenth] century." In 1871 Mr. T. Southwell, writing in the 'Transactions' of the Norfolk and Norwich Naturalists' Society, states: "It is probable that the aboriginal race is now extinct, and that those occasionally met with are either stragglers or descended from a stock introduced in consequence of their usefulness in forming earths for the foxes." To Mr. Southwell's theory I am much inclined, in disagreement with statements made by Mr. Walter Rye, the antiquarian, and some others, who incline to believe that the primordial race has never been extirpated. Mr. Southwell gives in the 'Transactions' (1871) records of seven "occurrences" (mostly *kills*) between 1857 and 1870, the only one in East Norfolk being obtained in 1868, at Somerton, in the Broad district. In 1884 two others are recorded in the same journal.

It occurs to me that it was partly due to the spurt given to the reclamation and culture of waste lands at the time of the Napoleonic wars that great efforts seem to have been made towards the extermination of this animal, which, but for its nocturnal and secretive habits and its marvellous powers of digging, would have been much more easily cleared out—at least, as far as East Anglia is concerned. The Pagets, writing in 1834 ('Sketch of the Natural History of Yarmouth'), stated that "thirty years ago these were common, especially about Bradwell and Browston [villages within five miles of

Yarmouth], but they are entirely extirpated." A Suffolk gentleman of considerable experience as a sportsman wrote me a few days since as follows : " In my youthful days I often heard old men talking about the large Badger-earth existing in Barnby [near Lowestoft], and the beasts became such a nuisance that they made an extermination raid on them, which would be about one hundred years ago." He makes reference to one taken near that spot about twenty-five years ago, which " was shown on a handbarrow about the streets by one 'Dozy' Goffin," and cites an example killed ten years after, which I think more than probably was an escape, for at that particular time (in 1893) I was negotiating for an adult Badger with a publican at Bungay, when he wrote " his regrets that the night before my letter arrived it broke from its cage and was lost." Bungay and Lowestoft are not much above twelve miles apart.

Private communications reached me during the correspondence from one gentleman who has been trying to preserve the Badger in his neighbourhood (which he wishes not to be divulged), and with apparent success. He speaks of "the main earth . . . [in which] has been a litter for the last eight years. . . . It now resembles a fortification, and it is almost incredible the amount of sand they have worked out. Four have been taken out this year alive ; last year the one . . . got took nearly twenty-four hours, after a previous ten hours' work in vain. The year previously three were unfortunately trapped." He further wrote that the captured animals were released, and that on another estate there is "at present a well-worked earth. . . . I cannot find any trace of Badgers being at any time imported ; certainly it has not been done by the West Norfolk Foxhounds in the last thirty or forty years. . . . It is no far distance [a locality in South-west Norfolk] to Lincolnshire and Huntingdonshire, where they have always existed for certain." I share with that gentleman his wish that "whatever the past may have been, they will never be extinct in the future." Whether aborigines or not, I hope that the Badgers still to be found in West Norfolk will be given a better chance than had those unfortunate Bustards which were reintroduced into Norfolk a few years since ; these all too easily fell victims to unscrupulous and ignorant gunners (one cannot call them sportsmen) who would as lief, but for the law, slaughter cattle and sheep that may stray into their preserves from a neighbouring estate as look at them. It is fortunate for them (the Badgers) that they possess traits and instincts far more likely to protect themselves than had the luckless Bustards.

ARTHUR H. PATTERSON (Great Yarmouth).

## A V E S.

**Fecundity of the Chaffinch.**—In a recent number of the 'Irish Naturalist' a statement was made by Mr. Moffat, on the authority of the Rev. Allan Ellison, from which it would appear that the Chaffinch is less prolific in Ireland than Hertfordshire. According to Mr. Ellison—and we have every reason to believe his statement—clutches of six are by no means uncommon in Hertfordshire, and clutches of five are quite unusual. It would be interesting to have observations of other readers in other parts of Britain relative to the fecundity of the Chaffinch, accompanied by a few short notes of its status. In this district I should think the average number of eggs is about 4·75. It is one of the commonest breeding birds in all our woods, and its status may be regarded as almost identical with what it was twenty or thirty years ago, or if it has varied at all it is within narrow limits. Nearly all the birds met with here in the winter are cock birds, but whether immigrants or not it would be difficult to say, but my own opinion would be in the affirmative.—E. P. BUTTERFIELD (Bank House, Wilsden).

**Wrynecks in North Lancashire.**—On Sept. 3rd a Wryneck (*Iynx torquilla*) was captured alive in the back yard of a cottage at Higher Heysham, on the shores of Morecambe Bay, near Lancaster, which died soon after its capture. A second was captured, also alive, at Overton, about three miles away, on Oct. 2nd, which, being placed inside a boat-builder's shed, escaped through a hole in the roof, and was not seen again. Howard Saunders, in his 'Manual,' says that Lancashire has seldom been visited by the species of late years. Yarrell says that northward it is scarce and rare in Yorkshire, and Selby that a few only appear every year in Northumberland. Mitchell, in his first edition of the 'Birds of Lancashire,' says that, "once a common summer visitor, it is now almost extinct." Formerly it was known as the "Long-tongue" on Cartmell Fell, and in the twenties used to nest on the Frenchwood estate, Preston. In Winmarleigh, not far from Preston, as recently as the second week of June, 1883, Mr. Arthur Breadell found a nest containing seven fresh eggs, this being, I think, the last occurrence of the bird—at least, in North Lancashire—presuming that the eggs were authentic.—H. W. ROBINSON (Lansdowne House, Lancaster).

**Honey-Buzzards (*Pernis apivorus*) in Lincolnshire.**—I have lately seen three specimens of the Honey-Buzzard, all obtained between Sept. 24th and Oct. 5th last. Two were shot near Grantham, and the

third was secured near the city of Lincoln. It would be interesting to know whether other observers have noticed this species lately in our eastern counties, as possibly there has been a larger immigration from the Continent this year than usual. In autumn these birds leave their nesting haunts in Europe, and Gätke has observed enormous flights passing over Heligoland, travelling westward, and the late Lord Lilford also noticed these migrating flocks in Spain, journeying to the south. In his work on the 'Birds of Heligoland,' Gätke states that this species somehow always manages to avoid rough weather during the autumn migration, so perhaps it was the gloriously fine late September this year which tempted these birds to visit our inhospitable shores. I think all three specimens were immature birds, one being of an almost uniform dark brown colour.—F. L. BLATHWAYT (Lincoln).

**Spotted Crake at Great Yarmouth.**—On Sept. 26th I received a Spotted Crake (*Porzana maruetta*) in the flesh, which was shot from one of the dykes on the Breydon marshes. The gunner tells me that his dog had great difficulty in getting the bird to rise. The squatting habits of the Rail family are well known to all naturalists. These birds at times will allow themselves almost to be trodden on, or even taken by the hand, rather than take to wing.—B. DYE (Great Yarmouth).

**September Movements of Shearwaters.**—Anent the notes and remarks of Mr. O. V. Aplin (*ante*, pp. 396–7) respecting a very extensive movement of Manx Shearwaters (*Puffinus anglorum*) taking place "in the latter end of August or early in September," the following note may be of interest:—On August 31st of last year (1907) I crossed in the steamer from Heysham to Douglas, Isle of Man. When nearly half-way across, and at about four p.m., the vessel passed through a large number of Manx Shearwaters, which were evidently undertaking a migratory movement of some magnitude. The birds were not in flocks, but usually from one hundred to two hundred yards apart, and all were heading in exactly the same direction. They were crossing our track diagonally, and, assuming that the boat was going almost due west, they were making a south-south-westerly course. And so intent were they individually in keeping this direction that those birds making towards the vessel scarcely deviated from their course; consequently a number passed quite close in front of the bows during the time that we were amongst them. The flight must have been fully five or six miles in width, as we were quite twenty minutes passing through them, and the boat was making at

the least fifteen knots an hour. To what distance this movement extended to the south-south-west or from the north-north-east cannot even be conjectured. The day was dull, and the birds varied in height from near the surface to about twenty feet above the water. The concluding sentence in my diary runs :—" There being very little wind, the birds used their wings more than I have seen Shearwaters do before, but still from time to time they would make use of the side or 'shear' motion, showing alternately the dark upper and white under sides of their bodies." — H. B. BOOTH (Ben Rhydding, Yorkshire).

**Old Local Bird Names.**—In a well-used copy of Montagu's 'Ornithological Dictionary' of 1802 I found (in manuscript notes) the following local names for birds, some of which may interest readers of 'The Zoologist.' This copy had been for many years the one treasured book of an old Bradford worthy, now dead some twenty years. In his time he had walked many thousands of miles with his gun for the purpose of obtaining birds to set up as "specimens." Although the "specimens" were dispersed, his descendants kept this work in memory of their forbear, and, thinking that it might contain some local notes, I borrowed the book. The only notes it contained, however, were made by a former owner, and were written in a clear scholarly style. They are at the least fifty years old, and are probably nearer one hundred years old, and, as they give various localities, no doubt the author of them had travelled about. It should be borne in mind, however, that the object of the annotator appears to have been *entirely* to include *additional* local names of species to those given by Montagu, as not another manuscript note of any kind is in the book. The notes are given exactly as they appear after the following species :—

*Mistle-Thrush* = Greybird (Nth. Pembrokeshire), Sprite, Thrice-cock, Storm-cock, Ter-cock (provincial).

*Wheatear* = Cooper (Sth. Pembrokeshire).

*Wren* = Crackie (Nth. Devon), Cutty Wren (Sth. Pembrokeshire).

*Blue Titmouse* = Blüspicker (North Devon).

*Long-tailed Titmouse* (*vide* Lesser Pettychaps) = Featherpoke (Notts. and neighbourhood).

*Chiffchaff* = Lesser Pettychaps (provincial), Feather-poke (Cambs.).

*Yellowhammer* = Gladdie (Nth. Devon).

*Common Bunting* = Gladdie (provincial).

*Chaffinch* = Daffinch.

*Bullfinch* = Hoops from Hüpps (Nth. Devon).

*Titlark* = Meadow Pipit, provincial "Ground-lark."

*Common Heron* = hougie-crane (South Pembrokeshire).

*Corncrake* = Bean-cracker (Sth. Pembrokeshire).

*Guillemot* = Eligney (Sth. Pembrokeshire).

"Fulmar, Molly-mawk, or Mollemoke is the term applied by Bewick to the Fulmar Petrel; may also be called 'Whalebirds,' from their constant attendance on the Whale."—H. B. BOOTH (Ben Rhydding, Yorkshire).

**Migration of Small Birds in Co. Sligo.**—Our home-bred small birds, as usual, disappeared this autumn. By Aug. 31st very few were about, and by the middle of September not a Chaffinch, Greenfinch, or Yellowhammer was to be seen in their usual haunts, and neither Blackbirds or Thrushes were to be seen anywhere in this locality by that date. However, on Oct. 8th and 9th, I was fortunate in witnessing several flights of small birds, probably Chaffinches because several exhibited white on their wings, and their mode of flight was quite similar to that of those birds. About eight o'clock on the morning of the 8th a flock of fifty birds passed over the lawn close by the house here. They kept low, almost touching the tree-tops as they flew steadily inland to the south-east, none remaining to rest. On the morning of the 9th, as I was walking across one of my fields near the estuary, between eight and nine o'clock, a flock of about fifty birds flew past me, and, as the wind was blowing freshly from the S.S.E., they kept low over the trees, flying steadily inland to the south-east. A short time afterwards another flock of twenty or twenty-five birds passed, and in less than a quarter of an hour two more of about the same number passed over, none pausing to rest on trees or fields, but all pursuing their course steadily to the south-east. Only once before have I seen a similar movement of small birds, also in October. I was looking at the turnips in one of my fields when I was surprised at seeing a large flock of probably a hundred birds flying low against a strong head-wind to the south-east; they flew so low that I thought they were going to pitch on the field, but as far as I could see them they never paused in their course. About half an hour afterwards I saw another flock, but not so large, passing also in the same direction. From these occurrences I think we may safely infer that on the autumn migration these foreign-bred birds have a regular line of flight across this district of country, and are only seen when strong head-winds cause them to fly low. Notwithstanding the passage of these large numbers, they do not

appear to have left many stragglers behind them, for I observed only a few Chaffinches (six or seven birds) in my stackyard, but as yet none in the fields. It is only within the past three or four days that I observed a few Blackbirds, two or three about this place and a few scattered along the roadside hedges.—ROBERT WARREN (Moy View, Ballina).

P.S.—I beg to correct a printer's error in my notes in last month's 'Zoologist' (p. 396), on Great Black-backed Gull breeding near Killala on the *Inch*, a gravelly island. He has printed "Luck" instead of "*Inch.*"—ROBERT WARREN.

**Notes on the Ornithology of Richmond Park, Surrey.**—On Good Friday afternoon (April 17th) of this year I saw on the larger of the Penn Ponds, Richmond Park, a party of four Shovelers (two pairs), and had the rare pleasure of watching these beautiful ducks for some time. As they kept well out in the middle of the water I was not sure of their species till, through the kind loan of a pair of field-glasses, I had a splendid view of them. For the most part they were merely resting with their heads under wing, only now and then rousing up sufficiently to paddle forward a few yards, and then resume their nap. On the Sunday they had gone. On Feb. 2nd there were some twenty Pochards, nearly all males, on the pond, and these had increased, on March 1st, to nearly fifty (all but six of that sex). All appeared to have left by the 22nd, but, singularly enough, a week later I found a solitary drake swimming about close to the plantation; in a few days this, too, had left. On March 22nd I was pleased to see no fewer than three pairs of the Great Crested Grebe on the large pond; they were very restless and pugnacious, and appeared now at one end and now in a remarkably short time quite at the other end, though keeping mostly in couples. On the same day there was a Dabchick there, perhaps the same which I had previously seen (Feb. 9th). This is the first year I have seen this latter species in the Park, though I think it has been seen (a solitary bird) by a keeper about this time in previous years. By March 29th there was only the one pair of Grebes, showing off to each other, and I saw the one once or twice bring up some weed in its diving, and carry it to its mate, though I did not observe that this was taken to the nest. On Good Friday the birds were busy building, and the nest was quite noticeable. I suppose that it must have been robbed, as soon afterwards both birds and nest had disappeared. I am glad to see that the Reed-Bunting seems to have established itself now about the east end of the ponds, where I had a good view of the male

on several occasions this spring. Even in February I once or twice came across one, I think a female, in some rushy ground; I have not before this year found it in the Park, though it is often plentiful on Wimbledon Common in winter. There is also a nice little colony of Tree-Sparrows here now; I often saw four or five together, and there are no doubt more. They seemed very fond of the young osiers, &c., at the east end, as did other birds; one Sunday afternoon in particular, at the beginning of June, this spot seemed alive with small birds of nearly a dozen species. The Wryneck was constantly heard here, and the Nuthatch several times. This last seemed to me more numerous last summer in the Park, being constantly seen and heard all over it in different places. The Lesser Spotted Woodpecker is almost always to be heard here, especially near the west end of the ponds, but I have not often noted the Greater species. This year I saw it or heard it several times; I suppose it probably breeds, as it is a very shy species, and not easily seen. I did not know till this year that the Whinchat was a mimic, but on May 31st one by Penn Ponds was performing wonderfully in this way; it reproduced the song of a Garden-Warbler and previously some notes of a Nightingale in a way which quite deceived me for the moment, though it was perched at the time in a young tree close by, and some distance from any plantation. Afterwards it reverted to its usual strain, which it always seems capable of varying a good deal. Another (or possibly the same bird), on the other side of the ponds, had shortly before reproduced the ordinary call of the Redshank so exactly that, though there were people walking about all round the ponds at that time, and it seemed very unlikely there could be one of the latter species about, it was some time before I could feel sure the note came from the Whinchat. This last bird was singing incessantly, and every now and then fluttering up from the bracken and off to some little distance, singing the while, rather after the style of the Whitethroat. A week later (June 7th) I found its nest under a slight tuft of grass, with five or six young a day or two old. This seemed quick work, as I saw no Whinchats at all till April 29th, and not till some few days later here. A nest of young Wheatears was found down a rabbit-burrow near by on May 31st. On May 10th two Wrynecks were seen pairing, but the nest was not found.—H. G. ATLEE (Caversham, Oxon).

[Mr. Mouritz recorded the presence of the Dabchick on the larger pond (*Zool.* 1905, p. 350), and also the probability of the Reed-Bunting breeding near the east corner of the smaller pond (*loc. cit.* p. 349).—ED.]

## INSECTA.

**Abundance of Crane-flies at Yarmouth.**—To me the most interesting phenomenon obtaining in this neighbourhood in September (irrespective of the invasion of Godwits, *ante*, p. 395) was the appearance of immense numbers of the Common Crane-fly (*Tipula oleracea*), or "Daddy-Long-legs," a harmless enough insect in itself, but whose larva, known as the notorious "Leather-jacket," is a most destructive creature. For two or three weeks their numbers were legion—they must have mustered in millions; they swarmed the rank marsh-grasses like locusts, and hung in bunches on the taller grasses topping Breydon walls for miles, until they looked like over-ripe reed-tufts in late autumn bursting with ripening seeds; they flew up in clouds as one brushed through the rank grasses. They were courting in the earlier part of the month, and were utterly oblivious to everything around them, and later on the females were depositing their eggs by the thousand in among the root-grasses, when those remaining upon the elevated grasses were mostly males. I was much interested in watching the seemingly much-weakened females which had deposited their eggs—some one hundred and fifty to two hundred in number, I roughly calculated in individuals—which were black and bean-shaped. They flew, or rather were wafted along listlessly, over Breydon, and feebly by the southerly and westerly winds, like so many parachute-seeds of the coarse thistle. Now and again they would lower themselves, as if to rest, when their leg-tips touched the water, on contact with which a start upwards would again be made, to be followed directly by another toe-dip. Each succeeding flight became shorter, until the weary thing would tumble on the surface, to rise once more perhaps from the crest of a ripple, and with an effort to clear itself it would once more mount a few feet. I noticed, however, that when the ovipositor had become once wetted the body appeared to lose rigidity, and successive dips waterlogged it, until at all sorts of angles and postures still weaker individuals would be struggling as they drifted by my boat. Further and further into the water the six long paralyzed legs would go, the wings being held erect as if to catch the wind, but eventually failing strength would give way altogether, and the poor brutes would feebly struggle until drowned. Thousands thus succumbed, and their dead bodies, hind legs drawn up, floated down to the sea. Queerly enough, I found hardly any males; their turn came a few days after, and by the end of the third week in September they had vanished, probably sharing the same fate. At about that time a long black wavy line, inches wide, by the sea

margin, told of their ending. I believe that some other localities were infested by great numbers of this insect, and I observed a report in the 'Daily Mail' of Oct. 12th that "they have been rising in clouds at every step on certain commons and gardens in the south of Hampshire and in Hertfordshire." That the larva of this insect does any considerable damage in marshland I cannot say—no complaints are made of it to my knowledge; and that it does not confine itself to vegetable substances as food I am assured, for in May, 1906, during a long dry period, the larvæ attacked the earthworms in St. George's Park (in the centre of the town), and both came struggling to the surface, the "Leather-jacket" remaining affixed to the centre of its prey, and draining it of the moisture in its body. Hundreds of worms thus came to the surface to die. Starlings feed upon both larvæ and the perfect insect with avidity; I have seen the gizzards of these birds packed with "Daddy-Longlegs," and observed them drilling holes in the well-shorn grassy levels of the same little park referred to, in order to get at the larvæ an inch or so down, and have marvelled at the instinct which teaches them to bore in the proper spot without loss of time.—ARTHUR H. PATTERSON (Ibis House, Great Yarmouth).

[I witnessed a similar "long black wavy line" of the dead bodies of these insects either in 1879 or 1883 on the sea margin between Yarmouth and Caister, and also in the month of September.—ED.]

**Note on the Proboscis or Tongue of *Sphinx ligustri*.**—The beak-like projection on the pupæ of *S. convolvuli* and *S. ligustri* is generally referred to in such a way as to leave the impression on the mind of a reader that it contains, coiled up like a watch-spring, the long proboscis of the imago. Such is not the case with regard to *ligustri*, and an examination of *convolvuli* would probably yield similar results. Of the two figures, the upper shows in outline the head and thorax of the pupa, and the lower shows the same with the horny case dissected away. The proboscis will be seen to make a loop, which lies within the beak, and its continuation passes on midway as far as the tips of the wings. R. E. RUMBELOW (Walpole Road, Great Yarmouth).

[This is not unknown to anatomists, but the point is well worthy of reiteration.—ED.]



## NOTICES OF NEW BOOKS.

*Conditions of Life in the Sea; a Short Account of Quantitative Marine Biological Research.* By JAMES JOHNSTONE. Cambridge: At the University Press.

THE sea and its animal life is a fascinating subject for naturalists; for the evolutionist it qualifies and enlarges his purview if he has hitherto based his conclusions alone on terrestrial biology, while to all thinkers the conditions of life in oceanic depths is a problem they would fain solve. Mr. Johnstone's volume fully sustains the standard value in the Cambridge Biological Series, and is a welcome addition to the subjects already treated in those excellent books.

Oceanographical discovery may now be said to start from the 'Challenger' Expedition of 1872. Much was done before that notable voyage, and much more has been accomplished since, but it focussed what was then known, and so immeasurably added to our knowledge that the 'Challenger' will always be a household word among marine biologists, and its discoveries are frequently referred to in the pages of this book. Haeckel, in his 'Plankton-Studien,' gave to the terms "Plankton," "Benthos," and "Nekton" an illuminative value which nothing can dim, though, as Mr. Johnstone writes, there is of course no absolute distinction between these three classes of organisms; "but this lack of absolute distinction, which is to be felt in all schemes of classification of natural objects, is no argument against the use of a series of terms which are sufficiently exact, are expressive, and have great practical convenience." These remarks may well be pondered by some advocates of a dogmatic taxonomy.

The struggle for existence in the sea is no less severe, if not even more so, than on land. "Countless millions of Pteropods must be destroyed by the Whales of the northern seas; Porpoises destroy hosts of Herring, Cod, Whiting, and other fishes; roving Sharks and Dogfishes, either singly or in shoals, must at times

produce devastation among the bottom-living fishes of sea areas ; Cod, which are themselves the prey of Porpoises, devour great numbers of fish such as Herrings, and Crustacea such as Hermit-Crabs, &c. ; Plaice and Flounders eat enormous numbers of Cockles, Mussels, and other small shellfish, and densely populated beds of these molluscs are at times decimated by hordes of Starfishes ; pelagic fishes like Herrings and Mackerel feed to a great extent on swarms of Copepods and other planktonic Crustacea, and twenty millions of *Ceratium* have been estimated in the stomach of a single Sardine." Nature red in tooth and claw is proclaimed, and in no indefinite manner, by marine biological observations, and the survival of the fittest is as much a truth of the ocean as it is on land. Sometimes observed correspondences are very curious, as when it is maintained by fishermen that the operation of the Wild Birds Protection Acts has been to cause a diminution in the abundance of Cockles in some localities, since increased numbers of Gulls were spared to eat these molluscs.

We might continue quoting biological facts and conclusions from these pages, but this is beyond the province and the limitation of reviews in this Journal. It is rather our duty and pleasure to point out a volume on life in the sea which may well be added to the libraries of naturalists, and one which is in welcome contrast in authority and scientific value to many of the so-called Nature books which are now so frequently published.

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*Through Southern Mexico ; being an Account of the Travels of a Naturalist.* By HANS GADOW, M.A., Ph.D., F.R.S. Witherby & Co.

WHEN Dr. Gadow is found as author of a book of travel we know that we shall enjoy the writings of a naturalist, and that the Amphibia and Reptilia will certainly not be neglected ; this anticipation is fully realized in the perusal of this well-illustrated volume, and we accompany the writer from the tropical lowlands to the mountain regions of snow, thus gaining an insight of the environment of much Mexican animal life which we may have studied previously.

We have, of course, a good account of the Axolotl, and

subsequently of the derivation of its name. "Axolotl" is the usual Aztec term for tadpole, which near Mexico city has been not transferred, but rather restricted, to the famous larva of the *Amblystoma*—in fact, "Axolotl" is simply *the* tadpole, and there is not much need for speaking of ordinary "taddies." Dr. Gadow naturally met with some strange experiences, and one which is not the least remarkable was the presence of Rattlesnakes in a camp on a ridge presumably at 12,500 ft. of elevation. That these snakes should have existed so close to the upper limit of life "in a climate cold even in the summer, and one implying a long term of hibernation, was certainly surprising." Again, whilst rambling along the edge of a forest a noise was heard resembling the mutter of a distant saw-mill, and, approaching nearer, the sound grew into a roar, like that of steam escaping from many engines, mingled with the sharp and piercing scream of saws. This was caused by a vast concourse of large green Tree-Frogs (*Hyla baudini*), and the resultant of the spawning females was calculated as one hundred million eggs. But now comes the recital of much wasted life, and happily so; on the party returning the next morning to photograph the scene there was not a single Frog left—"the water had all evaporated, and the whole place was glazed over with dried-up spawn. The prospective chance of millions of little Frogs was gone, their expectant parents having been deceived in calculating their day of incarnation."

Dr. Gadow reflects the growing dissent to the too much used theory of "warning coloration," and instances the case of Coral Snakes so frequently "paraded" as examples supporting that hypothesis. Black and carmine or coral-red, in alternate rings, are the usual pattern, but "upon a black ground red is the first colour to disappear, or rather to produce in combination with it a neutral tint; next follows orange, then green and blue, and lastly yellow, which is far less easily effaced than white upon black. We conclude that in most cases the combination of red and black is a self-effacing, rather than a warning, pattern."

From these quotations it will be seen that this book gives us much bionomical information from Amphibian and Reptilian observation. The account of all natural history expeditions divulges the speciality of the naturalist; frequently it is ornitho-

logical, sometimes it is mammalogical, and not unusually entomological; hence this publication, from Dr. Gadow's own standpoint and study, supplies valuable material for the evolutionist as well as information for the zoologist. We do not allude to the botanical and archaeological chapters—*chacun à son goût*; we are now addressing zoologists in 'The Zoologist.'

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*The Origin of Vertebrates.* By WALTER HOLBROOK GASKELL,  
M.A., LL.D., &c. Longmans, Green & Co.

In the author's introduction to this important book he writes: "I have been told that it is impossible for one man to consider so vast a subject with that thoroughness which is necessary, before any theory can be accepted as the true solution of the problem." The truth of this statement becomes patent to any conscientious reviewer of Dr. Gaskell's volume, for if "zoology without physiology is dead, and physiology in many of its departments without comparative anatomy can advance but little," an ordinary naturalist who may study 'The Origin of Vertebrates' must be well equipped to weigh the evidence with that judicial capacity which only special knowledge can supply, and without which no impartial verdict can be given. The theory advanced is best given in the author's own words, and is "that the so-called central nervous system of the vertebrate is in reality composed of two separate parts, of which the one, the segmental part, corresponds to the central nervous system of the highest invertebrates, while the other, the unsegmented tube, was originally the alimentary canal of that same invertebrate."

The theory is very largely a physiological one, but an excellent summary at the end of each chapter enables the student to both understand the author's progress with his argument and to again study his facts advanced in support of the different conclusions claimed in that summary. This method is exceedingly fair and thorough; we must bring both thought and knowledge to estimate the strength of this proposition, but we are never bewildered; the facts in its support are clearly marshalled and ably stated, and if some readers may not follow Dr. Gaskell in the whole strength of his conclusions, none can fail to find his time and thought have been rewarded by an exceptional exploration in

the domain of animal physiology. It is needless to say that the work is written on the evolutionary conception, pure, simple, and undefiled, for no such a discussion could be conducted on any other principle.

Leaving the physiological arena for that of more evolutionary philosophy, we are met with two aphorisms—one near the beginning, the other near the close of the volume—and these may be taken to express the result of estimating the importance in animal evolution of the different progressive planes of the central nervous system :—(1) “The race is not to the swift, nor to the strong, but to the wise.” (2) “Success in this world depends upon brains.” These statements are, of course, not quite synonymous; wisdom is not always dependent, so far as evolution is concerned, on “brains” or intellect. We have all at times met with the wise though uneducated and very average man; we have also known the brilliant and highly educated man from whom wisdom is absent; one of the greatest confusions in mental concepts of the present day being the want of differentiation between “wisdom” and “learning.” Consequently, we rather incline to the opinion that in animal evolution *aptitude* rather than *intellect* has been a more important factor. In an anthropomorphic sense we may overestimate the genus *Homo* as the evolutionary goal. Man, regarded as an animal, is gregarious, social, and predatory; the great increase in his brain power has been acquired principally in the struggle with his own species, and is conditioned more by the time- than the cosmic-process. His non-animal entity does not arise in the present discussion.

If we have not misunderstood the argument of this brilliant book, we have—perhaps and possibly wrongly—a less decided view of the central nervous system as the dominant factor in animal evolution.

